IBM WebSphere Voice Response for AIX, V6.1 updates and enhances this highly scalable, interactive voice response system

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At a glance

WebSphere® Voice Response for AIX®, V6.1 (WebSphere VR V6.1) supports:

- A highly scalable (with a maximum of 480 channels per system or logical partition (LPAR)), interactive voice response system based on the latest industry-strength AIX Power® Systems platforms
- Connectivity to Voice over Internet Protocol (VoIP) networks without the need for additional Peripheral Component Interconnect (PCI) hardware adapters
- Connectivity with Time Division Multiplexing (TDM)-based networks using optional WebSphere VR hardware adapters or optional Session Initiation Protocol (SIP)/ TDM gateway equipment
- TDM connectivity, which with Signaling System Number 7 (SS7), Integrated Services Digital Network (ISDN), and Channel Associated Signaling (CAS) networks includes both E1 and T1
- Three application authoring environments: native WebSphere VR state tables, Java™ applications, and VoiceXML applications
- Interoperability with IBM® and Vendor Speech Technologies compliant with Media Resource Control Protocol (MRCP) V1.0 specification, for conversational speech applications and for text-to-speech function

Enhancements in WebSphere VR V6.1 include:

- Compatibility with the latest software levels: IBM AIX V6.1, IBM XL C/C++ Enterprise Edition for AIX, V9 compiler, IBM DB2® Workgroup Server Edition V9.5, and IBM 32-bit SDK for AIX, Java Technology Edition, V6
- Compatibility with all key IBM Power Systems servers, including IBM BladeCenter® POWER® processor-based blades
- 64-bit drivers for hardware adapters
- Support for Internet Protocol version 6 (IPv6)
- Java and VoiceXML application configuration interface
- Compatibility with W3C CCXML working draft, January 2007

Migration

WebSphere VR V6.1 provides for migration of WebSphere VR applications, data, and configuration from WebSphere VR 4.2.

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

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Overview

WebSphere Voice Response for AIX, V6.1 is an application services platform and an interactive voice response (IVR) system for small to large enterprises, telephone companies, and service providers.

WebSphere VR V6.1 modifies and updates this highly robust and scalable product from IBM, and is compatible with the following underlying technologies:

- IBM AIX V6.1 (5765-G62)
- IBM XL C Enterprise Edition for AIX, V9 (5724-S70)
- IBM XL C/C++ Enterprise Edition for AIX, V9 compiler (5724-S71)
- IBM 32-bit SDK for AIX, Java Technology Edition, V6
- IBM DB2 Workgroup Server Edition V9.5[1] (5765-F35)
- IBM POWER6™ processor-based Power Systems servers
- IBM BladeCenter POWER processor-based blade servers
- Internet Protocol version 6 (IPv6)

[1] IBM DB2 Workgroup Server Edition (DB2 WSE) V9.5, program number 5765-F35, is a mandatory software requirement for WebSphere VR V6.1 and is shipped with WebSphere VR V6.1 as a "limited use" copy, entitling customers to install and use DB2 WSE, subject to the terms and conditions of the license agreement that accompanies DB2 WSE. Note that DB2 WSE is not part of WebSphere VR V6.1 and is subject to its own license agreement. DB2 WSE is also available as a separate product from IBM.

Significant changes and new function in WebSphere VR V6.1 include:

- Compatibility with World Wide Web Consortium (W3C) Call Control eXtensible Markup Language (CCXML) working draft, January 2007
- Java and VoiceXML application configuration enhancements
- 64-bit drivers for hardware adapters

Existing IVR applications will continue to work when migrated to WebSphere VR V6.1. There may, however, be limitations in speech technology support; refer to the Description section.

The following skills are necessary to install, configure, and commission WebSphere VR V6.1:

- Telephony skills to connect the product to a public switched telephone network (PSTN) switch or networking skills to connect to a VoIP network
- UNIX/AIX skills for software installation and configuration
- One of the following programming skill sets:
  - VoiceXML, CCXML, and Eclipse-based application development skills
  - Java programming skills for using Java programming interfaces in WebSphere VR
  - WebSphere VR and C/C++ skills for programming in state tables and custom servers

If these skills are not available in your organization, contact an IBM Certified Voice Systems Business Partner or a WebSphere software specialist for more information.

Key prerequisites

Refer to the Hardware requirements and Software requirements sections.

Planned availability date

September 25, 2009 (electronic software delivery)

October 30, 2009 (media and documentation)

Description

VoIP telephony using Session Initiation Protocol

With WebSphere Voice Response for AIX V6.1, you can connect to a VoIP network without a hardware adapter card.

VoIP features include:

- Session Initiation Protocol (SIP) support for VoIP signaling:
  - TCP or User Datagram Protocol (UDP) compliant to industry standard Request For Comment (RFC) 3261 and other relevant SIP RFCs
  - Transmitted and received through the system Ethernet port (using the AIX TCP/IP stack)
  - Connections to soft phones, hard phones, and proxies that conform to supported SIP standards
- Real Time Protocol support for VoIP media:
  - Support for Real Time Protocol/Real Time Control Protocol (RTP/RTCP), using UDP compliant to industry standard RFC 1889
  - RTP/RTCP media transmitted and received through the system Ethernet port (using the AIX TCP/IP stack)
  - Codec for uncompressed G.711 only (A-law and mu-law)
  - Dual Tone Multi-Frequency (DTMF) send/receive keys using audio tones or RTP payload packets that are RFC 2833 (Telephone Event) compliant
- Application support:
  - Existing and new state table, Java, VoiceXML, and CCXML applications can be used with SIP.
  - Many applications require no change. Others can be extended to exploit SIP capabilities.
  - The tagged string interface between SIP and applications allows access to SIP headers (including diversion, from, to, request, alang, final response, and subject header (on bye)).
- Inbound and outbound calls:
  - Blind and supervised attended call transfer
  - Tromboning between SIP channels on same adapter type
  - Invite again from remote party, allowing mid-call changes to session characteristics
  - Blind notify for Message Waiting Indication (MWI) control

Note: WebSphere VR V6.1 retains a numeric numbering plan for subscriber profiles and called/calling numbers. Therefore, some solutions such as Unified Messaging may require an SIP proxy or gateway with a numeric numbering plan to provide called/calling number information.

Logical partitioning: WebSphere VR V6.1 supports the dynamic logical partitioning (DLPAR) environment on IBM AIX V6.1 with IBM Power Systems servers. WebSphere VR V6.1 may be installed in a maximum of two LPARs running in the same server. Micro-Partitioning™ is not supported. It is recommended that each WebSphere VR V6.1 production system instance be assigned a minimum of two processors for each LPAR. Virtualization is not supported. The IBM Digital Trunk Telephony Adapter

(DTTA) adapter and IBM Digital Telephone Ethernet Adapter (DTEA) adapter support LPAR. However, the following adapters do not support LPAR:

- NewNet[2] Signaling System Number 7 (SS7) adapter
- Brooktrout TR1034 FAX adapter

[2] From August 2007, NewNet Communication Technologies LLC acquired ownership of the D7 software stack from SS8 Networks Incorporated.

On demand feature

You can manage your licenses using License Use Management (LUM) tools. Because licenses can be shared across multiple servers and sites, you can respond to immediate demands on your systems and allocate channels on systems that need them. The licenses are enabled when the channels are enabled.

Choice of channels for on demand access

WebSphere VR V6.1 includes VoiceXML and CCXML industry-standard programming environments that handle voice call processing and telephony channel control. It can be integrated with an application server, such as WebSphere Application Server, to deliver voice-enabled On Demand Business solutions. You can include MRCP version 1 compliant speech-enabled applications using speech recognition or text-to-speech.

Contact/call center solutions: WebSphere VR for AIX is the self-service channel in many contact and call center solutions. It can be deployed either behind the call center switch or in front of the PBX or automatic call distribution (ACD) switch. Many call centers deploy WebSphere VR behind the switch. WebSphere VR is deployed in front of the switch where a significant percentage of calls are completed in the IVR application or where the WebSphere VR is used to provide call steering across several call centers. With VoIP SIP support, you can also use WebSphere VR in IP contact/call center solutions. You can use WebSphere VR in conjunction with products from the main Computer Telephony Integration (CTI) suppliers, including Genesys and Cisco.

On demand voice services platform for service providers

WebSphere VR for AIX is a proven platform for delivering solutions to service providers.

- An open platform running UNIX® with CCXML and VoiceXML industry-standard programming environments and IVR programming environments for its existing clients.
- Resilient and highly scalable, running on IBM Power Systems servers and IBM BladeCenter POWER processor-based blades, and meeting Network Equipment Building Standards (NEBS) compliance.
- Highly scalable to 480 channels per server. Such systems can be clustered for large installations.
- Highly scalable and redundant SS7 software for use in service provider networks.
- Support for next-generation VoIP networks with existing applications and services. Access to signaling information allows development of new and enhanced services.
- Support for mass-calling applications.
- Scalable, redundant, and resilient centralized application management using application servers for VoiceXML applications.
- IBM HACMP™ and WebSphere Voice Response Single System Image (SSI) clusters for state table and custom server applications.

Telephony Protocol support

WebSphere VR V6.1 supports multiple Common Channel Signaling (CCS) and Channel Associated Signaling (CAS) telephony protocols, as well as country variants. Supported protocols include:

- E1 and T1 CAS, including "Ear and Mouth" (E&M), Foreign Exchange Station/Loop Start (FXS/LS), Foreign Exchange Station/Ground Start (FXS/GS), R2, R2 Multi Frequency Compelled (R2MFC)
- E1 ISDN including EuroISDN, Q-Interface Signaling (QSIG)
- T1 ISDN including 5E8, 5E9, TR41449, National, Digital Multiplex System (DMS) National 2, DMS100, DMS250, and INS 1500
- E1 and T1 SS7

SS7 support

The E1 SS7 solution used by WebSphere VR 3.1 was withdrawn by NewNet. It is not supported on WebSphere VR V6.1. The D7 software stack, from NewNet, works on the same hardware but uses a new software stack and supports both ANSI (T1) and ITU (E1) versions of SS7. PRPQ 7J0465 is required for SS7 support in WebSphere VR V6.1. In addition, with WebSphere VR V6.1, the only supported SS7 link controller hardware adapter is the HAX50PCGEH quad E1/T1 card.

Notes:

- PRPQ 7J0465 replaces PRPQ 7J0426 for SS7 E1 (worldwide, except for U.S. and Japan). WebSphere VR 6.1 supports the same SS7 E1 switches and networks as WebSphere VR V4.2.3 and WebSphere VR V3.1.
- The SS7 Call Manager (5724-F79) is no longer required when using the SS7 PRPQ 7J0465.

SS7 features

- Reuse of E1 hardware adapters from previous solutions (that is, the HAX50PCGEH quad E1/T1 card).
- Scalability to 2304 (T1) or 2880 (E1) channels.
- Support for previous SS7 function with ITU-ISUP Generic as the main switch connection.
- Support for T1 ANSI (generic and MCI variant) networks.
- Support for E1 ITU 1997, ITU White Book (1992, 1993), CCITT Blue Book (1988).
- Standard T1 or E1 link for signaling; no support for the older serial V35, which has insufficient bandwidth for 2,000 channels. Newer VoIP transports are not supported.
- The D7 product has a different redundancy strategy from the previous version. Two links, NewNet cards and D7 software stacks, are both active (load-sharing) at all times; if one is lost, the other is ready with no loss of calls.

For details, refer to the publication *WebSphere Voice Response for AIX V6.1 General Information and Planning*

http://www.elink.ibmlink.ibm.com/public/applications/publications/cg ibin/pbi.cgi

CCXML V1.0 support

- Use of CCXML is optional. Existing applications not using CCXML do not need to change.
- CCXML applications migrated from WebSphere VR V4.2 may require modifications due to CCXML spec changes: see the WebSphere VR documentation.
- CCXML enables XML-based call control for enterprise and service-provider applications and enables all applications to be stored on the central Web or application server for reliability and redundancy.
- CCXML enables the routing of incoming calls to specific applications based on ANI or DNIS, thus simplifying the configuration on the base Voice Response platform.
- CCXML can be used with VoiceXML V2.0 or VoiceXML V2.1 and Java applications with basic inbound and outbound calls handled by CCXML.
- CCXML Browser parses all the tags according to the level of World Wide Web Consortium (W3C) standards it supports -- at the 2007 specification level.

- The WebSphere VR signaling process can pass extra protocol data, such as ISDN and SS7 information elements and SIP header information (in tags using ECMA script) on incoming calls, to CCXML applications.
- The WebSphere VR signaling process can present calls in alerting to CCXML applications where the protocol permits, enabling playing of announcement messages to the caller without the caller being connected and the caller being charged (including early media support).
- CCXML enables specification of a channel group on an outbound call to select which protocol to make the outbound call.
- CCXML is responsible for call handling within an application and can connect to CTI products.[3]
- Basic HTTP server (see Appendix K, W3C CCXML working draft, January 2007) is included to facilitate external interaction and control.

[3] Support is available for CTI products for use with contact centers, call center applications, and telecommunication solutions.

Limitations

Some tags, for example, "conference", which have no functional support in WebSphere VR V6.1, return no-ops. For more information, refer to *WebSphere Voice Response for AIX: Using the CCXML Browser* (SC34-7092).

Echo cancellation

Echo cancellation on the DTTA adapter delivers capability and reduces cost, without the need for external echo canceller boxes. Features include:

- Removes the mandatory requirement for an initial force play convergence prompt, although this is still recommended for optimum performance
- Delivers improved echo cancellation during the call on account of the continuous convergence up to 32 millisecond echo delays
- Removes the possibility of failure of initial calibration due to excessive echo (previously, echo cancellation within the call was unusable if the initial calibration failed)
- Delivers improved overall echo cancellation (smaller echo residual signal means improved voice recognition and more reliable barge-in)

Scalability of VoiceXML to 480 channels with DTTA adapters

- Simple VoiceXML V2.0/2.1 applications with no speech recognition or text to speech can be supported on a single server with a minimum of two 3 GHz processors, or the equivalent.
- More complex applications with speech recognition or text to speech can be supported with 480 channels of telephony on a single server but with VoiceXML V2.0/2.1 browsers distributed across other servers.

Migration

If you are migrating systems that are available 24 x 7 from earlier releases of WebSphere VR to WebSphere VR V6.1, they must first be upgraded to AIX V6.1 (TL03/SP1) to minimize downtime. All WebSphere VR V4.2.3 function that can be migrated to WebSphere VR 6.1 is supported under AIX V6.1 TL03/SP1, provided that WebSphere VR 4.2.3 is at current PTF levels before any AIX upgrade. Refer to

http://www.ibm.com/support/docview.wss?uid=swg21372074

The next steps are then to save the IVR environment, uninstall WebSphere V4.2, install WebSphere VR V6.1, and restore the IVR environment.

PCI fax card

The Brooktrout fax card (TR114), withdrawn from marketing by Brooktrout, is not hardware-compatible with current Power System servers. It is replaced with a new Brooktrout card (TR1034) with similar function. WebSphere VR V6.1 supports one

TR1034 Fax card (30 channels). WebSphere VR V3.1 code that supports the old TR114 fax card is not removed.

Limitations

- For TDM telephony, only the DTTA hardware adapter is now supported. For VoIP telephony, WebSphere VR continues to utilize the virtual Digital Trunk No Adapter (DTNA) using processing power from the System p® processors.
- The DTTA adapter can be obtained from IBM while stocks remain available.[4] Customers should be considering VoIP implementations of WebSphere VR and, where necessary, using commercial VoIP-to-TDM gateway devices to provide connectivity to legacy TDM networks.

[4] Refer to Withdrawal announcement 909-188, dated August 11, 2009, which describes supply limitations on the 7311-D20 expansion drawer, and implications for the IBM PCI DTTA. In addition, all orders for DTTA adapters will require approval via i-listed RPQ 81766. Contact your IBM representative for further information.

WebSphere VR for AIX, V6.1 continues to support AIX Logical Partitioning, with some limitations.

Accessibility by people with disabilities

WebSphere Voice Response for AIX has three types of user:

- Telephone callers: Users of applications that clients create to run on WebSphere VR. They make up the vast majority of the WebSphere VR user population. They do not interact with any GUIs, only with the telephone user interfaces provided by the applications. These telephone user interfaces are fully accessible to people with no vision or low vision and, if speech recognition is implemented, to people with manual disabilities. Telephony devices for the deaf are supported in addition to ordinary phones. For any callers able to use a telephone, WebSphere VR provides full accessibility to your data.
- Application developers: Interfaces (or voice applications) are created by application developers who use standard application development tools to access the Java and XML application programming interfaces that WebSphere VR supports. WebSphere VR uses Eclipse-based tools.
- System administrators: WebSphere VR systems and applications are managed and monitored by systems administrators who use a variety of user interfaces to perform their tasks. Systems running VoiceXML applications are fully accessible. For systems running state table applications, some tasks can be performed using either a GUI or the command line, while others can be performed only using the GUI.

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Section 508 of the U.S. Rehabilitation Act

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http://www.ibm.com/able/product_accessibility/index.html

The following features support use by people with disabilities:

- Operation by keyboard alone
- Optional font enlargement and high-contrast display settings
- Ability to run with screen readers and screen magnifiers for use by people with visual impairment
- Optional display of audio alerts for people with hearing impairment
- Communication of all information independently of color

- Ability for the user to request more time to complete timed responses

Statement of direction

IBM intends to support Unified Messaging for WebSphere VR V4.2, a separately orderable product from IBM that delivers the following:

- Compatibility with WebSphere VR V4.2 and WebSphere VR V4.2.3
- Compatibility with IBM AIX V6
- Messaging support and mailbox repositories for voice mail, fax, and e-mail
- Operation with Session Initiation Protocol (SIP) and fax
- Voice interface supporting VoiceXML V2.0/2.1

For further information, contact your IBM representative.

The information on this new product is: (i) intended to outline IBM's general product direction, and should not be relied on in making a purchasing decision; (ii) for informational purposes only, and may not be incorporated into any contract; and (iii) not a commitment, promise, or legal obligation on the part of IBM to deliver any material, code, or functionality.

The development, release, and timing of any features or functionality described for IBM's products remains at IBM's sole discretion.

Program number

Program number	VRM	Program name
5724-I07	6.1.0	WebSphere Voice Response for AIX

Education support

Training is available for IBM WebSphere Voice Response for AIX.

IBM training provides education to support many IBM offerings. Descriptions of WebSphere courses for IT professionals and managers are on the IBM WebSphere Education Web site

http://www.ibm.com/websphere/education

Refer to the IBM WebSphere Education Web site for information on course locations and availability dates.

Call IBM training at 800-IBM-TEACH (426-8322) for catalogs, schedules, and enrollments.

The IBM WebSphere Education team delivers a comprehensive portfolio of education services to help customers and IBM Business Partners successfully deploy SOA and integrate IBM's WebSphere middleware products to achieve the maximum benefit.

Education is a key component to ensuring software success. A study by the IBM WebSphere Support Team has shown lack of training as the third most common cause of deployment issues for three years running. Our curriculum provides a unique training value, built on exclusive product knowledge direct from IBM developers cemented with expert instructors, and flexible time and cost-saving training options. The IBM WebSphere Education team works closely with product developers and services organizations to ensure that the courses we offer provide the most up-to-the-minute technical and product information. Our courses place

an emphasis on the advanced knowledge and insight that only these sources can provide. We draw from a deep pool of IBM technical experience in the development of our courses, and pass that knowledge on to our students.

With over 200 courses across eight curriculums, WebSphere Education provides training that spans the spectrum of skills needs from introductory product overviews to advanced programming and administration. Hands-on labs let you work with fully functional versions of the software you are studying to round out your training experience. Several training options are available, including classroom, private customized courses, or instructor-led or self-paced online learning letting you train from your office without traveling.

For more information about available education offerings, visit

http://www.ibm.com/websphere/education

Role-based skills roadmaps can be found at

http://www.ibm.com/software/websphere/education/paths/

Offering Information

Product information is available via the Offering Information Web site

http://www.ibm.com/common/ssi

Also, visit the Passport Advantage® Web site

http://www.ibm.com/software/passportadvantage

Publications

A printed Quick Start Guide is shipped with this product. No other printed publications are shipped with this product.

The following publications are provided softcopy, in PDF format, on the IBM Publications Center. If hardcopy is required, then these publications can be printed from the supplied PDF.

Title	Form number
Configuring the System	SC34-7078-00
Deploying and Managing VoiceXML and Java Applications	GC34-7080-00
Designing and Managing State Table Applications	SC34-7081-00
Developing Java Applications	GC34-7082-00
General Information and Planning	GC34-7084-00
Installation	GC34-7095-00
Managing and Monitoring the System	SC34-7085-00
Problem Determination	GC34-7087-00
SS7 Support for WebSphere Voice Response: SS7 User's Guide	GC34-7090-00
Using the CCXML Browser	SC34-7092-00
Voice over IP using Session Initiation Protocol	GC34-7093-00
3270 Servers	SC34-7075-00
Application Development using State Tables	SC34-7076-00
Cisco ICM Interface User's Guide	SC34-7077-00
Custom Servers	SC34-7079-00
Fax using Brooktrout	GC34-7083-00
Programming for the ADSI feature	SC34-7088-00
Programming for the Signaling Interface	SC34-7089-00
User Interface Guide	SC34-7091-00
VoiceXML Programmer's Guide	GC34-7117-00

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http://www.elink.ibmlink.ibm.com/public/applications/publications/cg ibin/pbi.cgi

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Technical information

Specified operating environment

Hardware requirements

For WebSphere Voice Response for AIX, V6.1, one of the following:

- For TDM telephony connectivity, a Power Systems server with IBM DTTA adapters (#6312 and #6313)
- For VoIP connectivity, a Power Systems server or BladeCenter POWER processor-based blade server (no DTTA required), and optionally using a VoIP/TDM gateway to connect to legacy TDM infrastructure.

The WebSphere VR for AIX licensed program runs on selected models of POWER4/ POWER5/POWER6 processor-based Power Systems servers and BladeCenter POWER processor-based blade servers. These may be rack-mounted or entry servers, depending on the performance and channel requirements. Smaller Power Systems can be used for voice application development. WebSphere VR V6.1 operates with AIX V6.1. Customers should ensure that the system unit planned for use operates with AIX V6.1; that is, POWER4™ processor-based servers, or later.

Connectivity with a TDM telephone network can be provided directly from IBM Power Systems models with PCI adapter slots and which support the DTTA adapter. Trunk connection requires the DTTA adapter (#6312 or #6313).

VoIP connections do not require a specialized adapter. Standard Ethernet network adapters are used. In addition, with the use of a VoIP/TDM gateway, systems with VoIP connectivity can connect to legacy TDM telephony environments.

Support for Power Systems with DTTA: For selected models, adapters are inserted within a special cassette referred to as the *blind swap Cassette* (for example, pSeries® 650 Model 6M2 and 7311-D10 I/O Drawer). For these models, you can order DTTA within its carriage under feature 6313. All other models require the DTTA without the blind swap cassette orderable under feature 6312.

WebSphere VR V6.1 supports the DTTA adapter in all IBM Power Systems in which the DTTA adapter has been previously supported. Refer to the WebSphere VR adapter guidance at

http://www.ibm.com/support/docview.wss?rs=761&uid=swg21253839

In addition, for current POWER6 processor-based Power Systems servers:

- IBM Power 520 and Power 550 servers: maximum 2 x DTTA adapters in system unit PCI slots

- Power 520, Power 550, and Power 570 servers: maximum 4 x DTTA adapters in each of maximum 2 x LPARs, using 7311-D20 drawers for attachment of DTTA adapters to the systems.

WebSphere VR 6.1 does not support the DTXA adapter, withdrawn in June 2004.

DTEA is still supported on the same system units as WebSphere VR for AIX V4.2.3. For further information, refer to Software Announcement 206-080, dated April 11, 2006.

Adapter compatibility: DTTA and DTEA can be mixed in system units in any combination up to a total of three or four adapters, respectively.

Mixing of DTTA and DTEA in the same system unit allows applications to use double trunk where calls between VoIP and PSTN can be bridged; for example, in IP call centers. Note that a single DTEA can support 96 channels when configured for T1 (U.S./Japan) and 120 channels for E1 (rest of the world). Like DTTA, each DTEA adapter provides support for four telephony trunks.

For installations where there is more than one DTTA or DTEA card in the same system unit, a top connector cable is required to connect all adapters that are used by WebSphere VR V6.1 in the same system unit. This cable, known as the H.100 bus cable, is available in two lengths, one with four drops and another with eight drops. For all but the largest configurations that also use fax adapters, or if adapters are installed in adjacent slots, the four-drop cable will usually be suitable. This cable can be ordered using one of the following options:

- At the same time as the system unit is ordered with the appropriate feature number. For example, p5-520 - feature number 2877 H.100, four-drop cable, or p5-550 - feature number 4353 H.100, eight-drop cable.
- As an MES on an existing system unit using the same feature numbers.
- Directly from a telephony cable supplier.

Support for BladeCenter POWER-based blades and Power Systems servers without an adapter for VoIP connection

Power Systems servers and BladeCenter POWER-based blade servers for use with VoIP and WebSphere VR V6.1 require, for each WebSphere VR V6.1 instance:

- A minimum of two processor cores
- A dedicated physical Ethernet interface
- A base of 1 GB of RAM
- An additional 10 MB of RAM per channel

Any system meeting the above requirement is suitable for VoIP. Moderate to large systems utilizing assistive technologies and Java or VXML applications may require additional RAM, and more or faster processors.

Capacity planning for adapterless configurations has to account for the processing otherwise done by the DTTA adapter. A development system with fewer than 30 channels may be supported by a single processor. A POWER6 processor-based system with 2 x 4.2 GHz processors can easily support 480 channels of a simple state table application. Additional factors in SIP capacity planning are for the use of DTMF detection and voice compression, both of which may reduce call capacity.

- DTMF detection: The system unit's processors are used for DTMF detection. This cost can be avoided if the VoIP network supplies DTMF send/receive keys using RTP payload packets: RFC2833 (Telephone Event).
- Compression: WebSphere VR can store voice data in its database using 5:1 compression. Voice is sent uncompressed (G711) over the VoIP network; therefore, the system unit's processors need to carry out the required compression and decompression on record and playback, respectively. For more information, contact your IBM representative.

Adapterless configurations have the following double-trunking capabilities:

- Calls can be double-trunked between adapterless connections using the Trombone Custom Server.
- Adapterless connections can coexist with DTTA in the same system unit, allowing hybrid PSTN/VoIP configurations in; for example, IP Call Centers. However, calls cannot be double-trunked between adapter and adapterless connections.
- Coexistence with DTEA (hardware VoIP adapter) is not supported.

AIX LPAR support considerations

- Although AIX Power systems in general can host many LPARs, any given system is limited to a maximum of two instances (LPARs) of WebSphere VR.
- One or two additional 7133-D20 I/O drawers may be required to attach to a system in order to provide sufficient slots for WebSphere DTTA hardware adapters and any other adapters used by the system or LPARs.
- Where a WebSphere VR instance uses more than one hardware DTTA adapter, all the adapters must be physically linked with a H.100 cable, and hence must reside in the same system or I/O drawer, ideally in adjacent slots.
- Where a system is hosting two WebSphere VR LPARs, the adapters of each WebSphere VR LPAR are separate, and require separate H.100 cables.
- Virtualization and Micro-Partitioning in WebSphere VR LPARs are not supported. This limitation means that each WebSphere VR LPAR requires its own communications adapter (for example, Ethernet), disk adapter (for example, SCSI), and its own physical disks.
- It is strongly recommended that no other applications are run in the same LPAR (or system, if LPAR is not used) as WebSphere VR.
- It is strongly recommended that any system or LPAR hosting WebSphere VR should have at least two dedicated processors (cores), especially where production loads are envisaged.
- If the adapterless VoIP WebSphere VR solution is used, or if a 7311-D20 drawer is attached, a minimum of two dedicated processors per LPAR is mandatory.

For additional information, visit

http://www.ibm.com/support/docview.wss?uid=swg21372103

Software requirements

WebSphere VR for AIX , V6.1

A mandatory installation requirement is telephony or networking skills for connection to networks.

Mandatory software requirements:

- IBM AIX V6.1 (5765-G62), with minimum Technology Level 03 Service Pack 01
- IBM DB2 Workgroup Server Edition V9.5,[5] Fix pack 4 (5765-F35)
- IBM 32-bit SDK for AIX, Java Technology Edition, V6, Service Refresh 3 (SR3), Level 6.0.0.75

[5] IBM DB2 Workgroup Server Edition (DB2 WSE) Version 9.5, program number 5765-F35, is shipped with WebSphere VR V6.1 as a "limited use" copy, entitling customers to install and use DB2 WSE, subject to the terms and conditions of the license agreement that accompanies DB2 WSE. Note that DB2 WSE is not part of WebSphere VR V6.1 and is subject to its own license agreement. DB2 WSE is also available as a separate product from IBM.

Optional software requirements

- IBM XL C Enterprise Edition for AIX, V9 (5724-S70)
- IBM XL C/C++ Enterprise Edition for AIX, V9 compiler (5724-S71)
- IBM WebSphere Application Server (5724-J08)

- IBM Communications Server for AIX, V6.3 for host communication using terminal emulation (5765-E51)
- JAWS screen reader on a PC for accessibility; for more information, visit

  http://www.freedomscientific.com/fs_products/software_jaws5intro.asp

The program's specifications and specified operating environment information may be found in documentation accompanying the program, if available, such as a readme file, or other information published by IBM, such as an announcement letter. Documentation and other program content may be supplied only in the English language.

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Package contents include:

- Quick Start Guide
- Quick Start CD-ROM, including publications
- WebSphere VR for AIX, V6.1 CD-ROM
- IBM DB2 Workgroup Server Edition V9.5[6] (5765-F35)

[6] IBM DB2 Workgroup Server Edition (DB2 WSE) Version 9.5, program number 5765-F35, is a mandatory software requirement for WebSphere VR V6.1 and is shipped with WebSphere VR V6.1 as a "limited use" copy, entitling customers to install and use DB2 WSE, subject to the terms and conditions of the license agreement that accompanies DB2 WSE. Note that DB2 WSE is not part of WebSphere VR V6.1 and is subject to its own license agreement. DB2 WSE is also available as a separate product from IBM. This program, when downloaded from a Web site, contains the applicable IBM license agreement and License Information, if appropriate, and will be presented for acceptance at the time of installation of the program. For future reference, the license and License Information will be stored in a directory such as LICENSE.TXT.

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IBM WebSphere Voice Response for AIX	IBM Pervasive Computing Division	WebSphere Voice Response

Program name	PID number	Charge unit description
IBM WebSphere Voice Response for AIX	5724-I07	AIX per Port

Charge metric

Program name	PID number	Charge metric
WebSphere Voice Response for AIX	5724-I07	Per telephony port user

Passport Advantage program licenses

Part description	Part number
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WebSphere VR per port License & SW Maintenance 12 months	D5146LL
WebSphere VR per port SW maintenance annual renewal	E00A7LL
WebSphere VR per port SW maintenance reinstatement 12 months	D5148LL

Passport Advantage supply

Program name/description	Part number
WebSphere Voice Response for AIX V6.1 Media Pack English US	BA0WXNA

Passport Advantage customer: Media pack entitlement details

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Media packs description	Part number
WebSphere Voice Response for AIX V6.1 Media Pack English US	BA0WXNA

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Program name/Description	Part number
WebSphere Voice Response for AIX V6.1	BAOWXNA

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